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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/055,785

01/25/2002

Robert Hammer

2002-01

8749

7590

03/10/2003

Lawrence W. Langley
2733 Big Falls Road
Blacksburg, VA 24060

EXAMINER

PRUCHNIC, STANLEY J

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 03/10/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/055,785

Applicant(s)

HAMMER ET AL.

Examiner

Stanley J. Pruchnic, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 (2 sheets) 6) ☐ Other: ____

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the mailing or post office address of each inventor. A mailing or post office address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing or post office address should include the ZIP Code designation. The mailing or post office address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

2. Although the application papers indicated an "*Application Data Sheet*" was enclosed, the Examiner has not found it in the file.

Drawings

3. The corrected or substitute drawings were received on **May 09, 2002**. The examiner has approved these drawings.

Specification

4. Note that the disclosure includes Renumbered Pages:
 - a. The page numbers required renumbering, because the Specification, as filed, included the drawings as Pages 2-9. These have been removed. Therefore the Examiner has informally renumbered Pages, originally "10"... "22", to be Pages numbered --2--...--14--.

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- b. Page 1 remains as filed, including sections entitled "References Cited" and "Abstract".
 - 5. The disclosure is objected to because of the following informalities:
 - c. The Title does not appear on the first page as required by 37 CFR 1.77(b), but instead it is on (renumbered) Page 2.
 - d. Perhaps the ABSTRACT on Page 1 should be deleted, since a new ABSTRACT on a separate sheet has been provided by Applicant in Paper #3 (filed 09 May 2002).
- Appropriate correction is required.

Claim Objections

- 6. Claim 9 is objected to because of the following informalities:
 - In claim 9, in line 2, please delete the word "a" after the phrase "**thermopile on a**" as being an obvious typographical error.
- Appropriate correction is required.

Claim Rejections - 35 USC § 112

- 7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 8. **Claims 4 and 5** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each one of claims 4 and 5, in line 1, the limitations "said slot" and "said plug" lack antecedent basis, and make the claim language confusing, since it is not clear

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whether the claim dependency is not as intended or the language is otherwise unclear. For consideration as to the merits, the claimed means for imbedding further comprises a plug which includes a slot formed in the side of said plug (Claim 4) and the claimed means for imbedding further comprises a plug which includes a slot formed in the end of said plug (Claim 5).

9. **Claims 9, 10 and 11** are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: any step of measuring heat flux in a solid body. It is considered that "consisting of" in the preamble, limits the claim(s) to only the recited steps, but the recited steps in Claim 9 are limited to

- a method of making a heat flux sensor as claimed in Lines 2-6 of Claim 9;
- imbedding the sensor within a solid body as claimed; and
- making electrical connections as claimed.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over SALLEE *et al.* (U.S. Pat. No. 4,817,436, hereinafter **SALLEE**) in view of U.S. Pat. No. 3,372,587 (**NANIGIAN**).

SALLEE discloses or suggests a sensor for measuring heat flux in a solid body comprising:

a thin substrate 2 (Fig. 1; Col. 6, Lines 17-35) of thermally conducting, electrically insulating material;

a thin film thermopile 8, 10 (Col. 5, Lines 31-50) deposited on a surface of said substrate with hot junctions near one end of said substrate and cold junctions near the other end of said substrate;

a thin, flat plate 24 of thermally conducting, electrically insulating material (Col. 6, Lines 17-35) for covering the thermopile on said substrate; and

electrical connections E_1 , S_1 (Col. 6, Lines 39-45) on said thin film thermopile for measuring its voltage as claimed by Applicant in claims 1 and 9.

Regarding Claims 7, 8 and 10: **SALLEE** discloses the materials of the detector head matching the thermal properties of the solid object.

SALLEE, as described above, does not clearly teach including a means for imbedding said substrate and said plate within said solid body as claimed by Applicant in Claims 1 and 9, or the means for imbedding comprising a cylindrical plug and a hole in the body suitable for a press fit, as claimed by Applicant in Claims 3 and 6, or a slot formed in the plug as claimed by Applicant in Claims 4-5.

NANIGIAN discloses that is known in the art to provide a heat flux detector with a means for imbedding comprising a cylindrical plug 11 and a hole in the body suitable for a press fit, including a slot formed in the plug (Col. 2, Lines 15-54).

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NANIGIAN further teaches or suggests that it is advantageous to include means for imbedding comprising a cylindrical plug 11 and a hole in the body suitable for a press fit, including a slot formed in the plug in order to benefit from minimized conduction errors (Col. 2, Lines 33-37).

NANIGIAN is evidence that ordinary workers in the field of heat flux measurement would recognize the benefit of providing means for imbedding comprising a cylindrical plug 11 and a hole in the body suitable for a press fit, including a slot formed in the end and side of the plug as taught by NANIGIAN for the heat flux sensor of **SALLEE** in order to benefit from minimized conduction errors.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the heat flux sensor of **SALLEE** with a means for imbedding comprising a cylindrical plug 11 and a hole in the body suitable for a press fit, including a slot formed in the end and side of the plug as taught by NANIGIAN in order to benefit from minimized conduction errors as taught by NANIGIAN.

12. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **SALLEE** in view of **NANIGIAN** and further in view of **MEDTHERM**.

SALLEE in view of **NANIGIAN** discloses or suggests all the limitations as claimed by Applicant in Claims 2 and 11, including the limitations of Claims 1 and 3-10, as described above in Paragraph 10.

SALLEE in view of **NANIGIAN** as described above, does not disclose a threaded slotted plug and threaded hole as claimed by applicant in Claim 2, or a threaded plug and threaded hole as claimed by applicant in Claim 11.

MEDTHERM discloses that is known in the art to substitute a heat flux transducer with a threaded plug and threaded hole for a smooth body, press fit mounting configuration because they are art recognized equivalent means for mounting a heat flux transducer (top of 3rd page).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute a threaded plug and threaded hole for the smooth body, press fit mounting configuration of **SALLEE** in view of **NANIGIAN** because it is an art recognized equivalent means for mounting a heat flux transducer as taught by **MEDTHERM**.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in PTO-892 and not mentioned above disclose related heat flow devices and mounting methods.

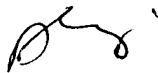
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stanley J. Pruchnic, Jr. whose telephone number is

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(703) 306-5474. The examiner can normally be reached on weekdays (Monday through Friday) especially from 8:30 AM to 11:00 AM and 12:00 PM to 4:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego F. Gutierrez can be reached on (703) 308-3875.

The **Official FAX** number for Technology Center 2800 is (703) 872-9318 for **regular** communications and (703) 872-9319 for **After Final** communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2800 receptionist whose telephone number is (703) 308-0956. The Technology Center 2800 Customer Service fax phone number is (703) 872-9317.



DIEGO F. F. GUTIERREZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800



Stanley J. Pruchnic, Jr.
5 March 2003